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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/761,554

01/21/2004

Edward L. Coyle

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CNH AMERICA LLC  
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EXAMINER

KIM, CHONG HWA

ART UNIT

PAPER NUMBER

3682

DATE MAILED: 05/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/761,554

Applicant(s)

COYLE ET AL.

Examiner

Chong H. Kim

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 18-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/27/04</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

The Examiner acknowledges the applicant's Amendment filed Feb 28, 2005 in response to the Office action made on Sep 22, 2004.

#### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the coil having a series of 180 degree bends as recited in claims 25 and 30; and the coil including fins and dimples as recited in claims 21, 26, and 31 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

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be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Carlson et al., U.S. Patent 5,931,218.

Carlson et al. shows, in Figs. 1-6, a method of cooling an axle assembly of a work vehicle, wherein the axle assembly includes an axle shaft (inherent), an axle housing 12, 18, 22, configured to substantially surround the axle shaft, a cooling coil 42 housed within the axle housing and having a passage therethrough and outer and inner surfaces, a lubricating fluid disposed within the axle housing, and a cooling fluid disposed within the passage, and further wherein the lubricating fluid is of a higher temperature than is the outer surface of the coil and the outer surface of the coil is of a higher temperature than is the cooling fluid, the method comprising steps of;

removing heat from the lubricating fluid by placing the lubricating fluid in contact with the outer surface of the coil wherein the outer surface of the coil is disposed between a brake assembly and a differential gearset;

removing the heat from the inner surface of the coil by circulating the cooling fluid through the passage;

directing flow of cooling fluid to the coil by using a back pressure regulating valve 134 to impose a pressure difference across the coil; and

removing the heat from the cooling fluid by circulating the cooling fluid through a heat exchanger.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 18-20, 22-24, and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baedke et al., U.S. Patent 5,316,106 in view of Carlson et al.

Baedke et al. shows, in Figs. 1-4, a method of cooling an axle assembly of a work vehicle, wherein the axle assembly includes axle shafts, axle housings 16, 17, configured to substantially surround the axle shafts, cooling devices (the inner lower surface of the axle housing) housed within the axle housing to cool the lubricant, but fails to show a coil disposed within the axle housing to remove the heat from the lubricant.

Carlson et al. shows, in Figs. 1-6, a method of cooling an axle assembly of a work vehicle, wherein the axle assembly includes an axle shaft (inherent), an axle housing 12, 18, 22, configured to substantially surround the axle shaft, a cooling coil 42 housed within the axle

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housing and having a passage therethrough and outer and inner surfaces, a lubricating fluid disposed within the axle housing, and a cooling fluid disposed within the passage, and further wherein the lubricating fluid is of a higher temperature than is the outer surface of the coil and the outer surface of the coil is of a higher temperature than is the cooling fluid, the method comprising steps of; removing heat from the lubricating fluid by placing the lubricating fluid in contact with the outer surface of the coil wherein the outer surface of the coil is disposed between a brake assembly and a differential gearset; removing the heat from the inner surface of the coil by circulating the cooling fluid through the passage; directing flow of cooling fluid to the coil by using a back pressure regulating valve 134 to impose a pressure difference across the coil; and removing the heat from the cooling fluid by circulating the cooling fluid through a heat exchanger.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the cooling method of Baedke et al. with the cooling method involving coil and cooling fluid as taught by Carlson et al. in order to provide a more effective cooling method so that the life of axle assembly is prolonged.

6. Claims 18 and 20-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baedke et al., U.S. Patent 5,316,106 in view of Klackner, U.S. Patent 2,687,784

Baedke et al. shows, in Figs. 1-4, a method of cooling an axle assembly of a work vehicle, wherein the axle assembly includes axle shafts, axle housings 16, 17, configured to substantially surround the axle shafts, cooling devices (the inner lower surface of the axle housing) housed within the axle housing to cool the lubricant, but fails to show a coil disposed

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within the axle housing to remove the heat from the lubricant wherein the coil includes fins or dimples, and formed of a single length of tubing in a plurality of parallel passes by a series of 180 degree bends.

Klackner shows, in Figs. 1-9, a method of cooling gear sets, wherein a coil 30 includes a single length of tubing in a plurality of parallel passes by a series of 180 degree bends and fins 35.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the cooling method of Baedke et al. with the cooling method involving coil and cooling fluid with fins and single tubing as taught by Klackner in order to provide a more effective cooling method so that the life of axle assembly is prolonged.

7. Claims 29-31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hvolka, U.S. Patent 5,190,123 in view of Klackner.

Hvolka shows, in Fig. 5, a method of cooling the lubricating fluid that is heated from a wet multiple disk brake disposed in the axle housing, but fails to show a coil disposed within the axle housing to remove the heat from the lubricant wherein the coil includes fins or dimples, and formed of a single length of tubing in a plurality of parallel passes by a series of 180 degree bends.

Klackner shows, in Figs. 1-9, a method of cooling gear sets, wherein a coil 30 includes a single length of tubing in a plurality of parallel passes by a series of 180 degree bends and fins 35.

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It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the cooling method of Hvolka with the cooling method involving coil and cooling fluid with fins and single tubing as taught by Klackner in order to provide a more effective cooling method so that the life of axle assembly is prolonged.

8. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hvolka in view of Klackner as applied to claim 29 above, and further in view of Schunck et al., U.S. Patent 4,633,938.

Hvolka in view of Klackner shows, as discussed above in the rejection of claim 29, the method of cooling the axle assembly by providing the coil to cool the fluid that is heated by the disk brake, but fails to show the coil being disposed entirely underneath the axle shaft.

Schunck et al. teaches, as shown in Fig. 2, the method of cooling the gearset by disposing a coil 20 entirely underneath the shafts.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the location of the coil of Hvolka in view of Klackner with the coil being disposed under the gearset system as taught by Schunck et al. in order to provide a more effective cooling system so that the mechanism will last longer.

### ***Response to Arguments***

9. In response to the applicant's argument that Carlson fails to disclose the coil being disposed between a brake assembly and a differential gearset, it is the Examiner's view that Carlson, as broadly interpreted, shows such limitation as amended in claim 18. The brake



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assembly as recited in claim 18 does not define exactly which or where the brake assembly is located. As broadly interpreted, the brake assembly could be the brake pedal system disposed in the driver side floor, or such assembly could be disposed in the front and rear wheels.

Depending on where the axle assembly is located, it appears that the coil as shown by Carlson is disposed between a brake assembly (any brake system that is not disposed on the same axle system where the coil is located) and the differential gearset.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Single tube coil with fins for cooling gearset devices.

Wellauer, U.S. Patent 3,736,812

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chong H. Kim whose telephone number is (571) 272-7108. The examiner can normally be reached on Tuesday - Friday, 7:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A Bucci can be reached on (571) 272-7099. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

chk  
May 10, 2005

  
CHONG H. KIM  
PRIMARY EXAMINER